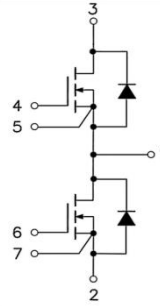


### 34mm Half Bridge SiC Module

Parameter	Value	Unit
$V_{CES}$	1700	V
$I_D$	300	A
$R_{DS(ON)}$	8.7	m $\Omega$
$Q_G$	504	nC



#### Features:

- High Current Density
- Low Inductive Design
- Low Switching Losses
- High-frequency Operation
- Zero Turn-off Tail Current from MOSFET

#### Applications:

- High Power Converters
- Motor Drives
- UPS Systems

#### Absolute Maximum Ratings ( $T_C=25^\circ\text{C}$ unless otherwise specified)

Symbol	Parameter	Value	Unit
$V_{DS}$	Drain-source Voltage	1700	V
$V_{GS}$	Gate-source Voltage	-10/+22	V
$I_D$	Drain Current (continuous) ( $T_C=25^\circ\text{C}$ )	300	A
$I_{DM}$	Drain Current (pulsed)	600	A
$T_{op}; T_{stg}$	Operating and Storage Temperature Range	-40 to +150	$^\circ\text{C}$
$T_J$	Junction Temperature	175	$^\circ\text{C}$
$R_{th(j-c)}$	Thermal Resistance, Junction-to- heat sink	0.14	$^\circ\text{C}/\text{W}$

#### MOSFET Characteristics

Symbol	Parameter	Min.	Typ.	Max.	Unit	Test Conditions
Static characteristics (at $T_C=25^\circ\text{C}$ unless otherwise specified)						
$B_{VDS}$	Drain-source Breakdown Voltage	1700	-	-	V	$V_{GS}=0\text{V}$
$I_{DSS}$	Zero Gate Voltage Drain Current	-	-	150	$\mu\text{A}$	$V_{DS}=1700\text{V}; V_{GS}=0\text{V}$
$I_{GSS}$	Gate-body Leakage Current	-	-	1.5	$\mu\text{A}$	$V_{GS}=20\text{V}; V_{DS}=0\text{V}$
$V_{GS(th)}$	Gate Threshold Voltage	2.0	-	4.0	V	$V_{DS}=V_{GS}; I_D=30\text{mA}$
$R_{DS(on)}$	Static Drain-source on Resistance	-	8.7	11	m $\Omega$	$V_{GS}=18\text{V}; I_D=150\text{A}; T_J=25^\circ\text{C}$
$V_{GS(on)}$	Recommended Turn-on Voltage	-	18	-	V	Static
$V_{GS(off)}$	Recommended Turn-off Voltage	-	-5	-	V	
$R_G$	Gate Resistance	-	1.2	-	$\Omega$	$V_{GS}=0\text{V}; f=1\text{MHz}$
Dynamic characteristics (at $T_C=25^\circ\text{C}$ unless otherwise specified)						

$C_{iss}$	Input Capacitance	-	19.4	-	nF	$V_{DS}=1200V$ ; $f=1MHz$ ; $V_{AC}=25mV$
$C_{oss}$	Output Capacitance	-	0.59	-		
$C_{rSS}$	Reverse Transfer Capacitance	-	0.048	-	pF	
$E_{on}$	Turn-on Switching Energy	-	14.1	-	mJ	$V_{DD}=1200V$ ; $V_{GS}=-5/+18V$ $I_D=150A$ ; $R_{G(ext)}=5\Omega$ Load=100 $\mu$ H
$E_{off}$	Turn-off Switching Energy	-	8.1	-		
$Q_{GS}$	Gate-Source Charge	-	156	-	nC	$V_{DD}=1200V$ ; $V_{GS}=-5/+18V$ $I_D=150A$
$Q_{GD}$	Gate-drain Charge	-	150	-		
$Q_G$	Total Gate Charge	-	504	-		
$t_{d(on)}$	Turn-on Delay Time	-	106	-	ns	$V_{DD}=1200V$ ; $V_{GS}=-5/+18V$ $I_D=150A$ ; $R_{G(ext)}=5\Omega$ Load=100 $\mu$ H
$t_r$	Rise Time	-	48	-		
$t_{d(off)}$	Turn-off Delay Time	-	241	-		
$t_f$	Fall Time	-	69	-		

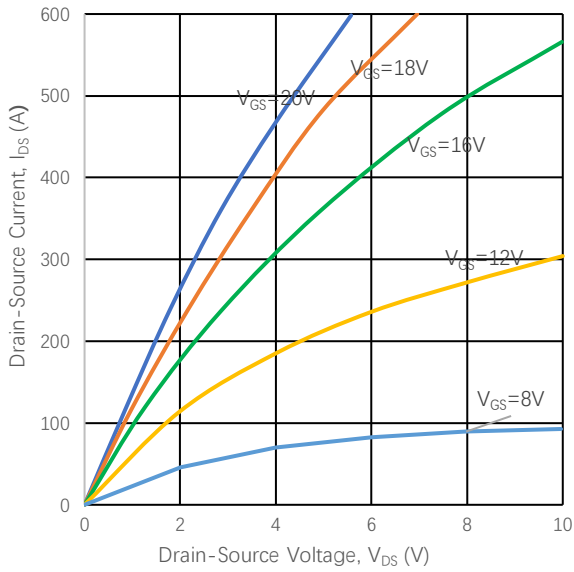
**Body Diode Characteristics** ( $T_J=25^\circ C$  unless otherwise specified)

Symbol	Parameter	Min.	Typ.	Max.	Unit	Test Conditions
$V_{FSD}$	Forward Voltage	-	-	6	V	$V_{GS}=0V$ ; $I_F=150A$
$I_S$	Continuous Diode Forward Current	-	150	-	A	$V_{GS}=0V$ ; $T_C=25^\circ C$
$T_{RR}$	Reverse Recovery Time	-	42	-	ns	$V_{GS}=-5/+18V$ ; $I_F=150A$ $V_R=1200V$
$Q_{RR}$	Reverse Recovery Charge	-	2754	-	nC	
$I_{RRM}$	Peak Reverse Recovery Current	-	74	-	A	

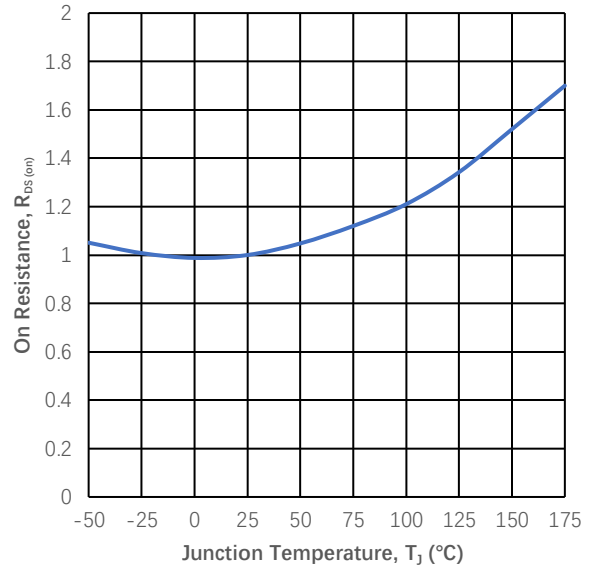
**Module Physical Characteristics**

Symbol	Parameter	Min.	Typ.	Max.	Unit	Test Conditions
$V_{ISOL}$	Isolation Test Voltage	-	3.0	-	kV	$f=50Hz$ ; $t=1min$
$L_{Stray}$	Stray Inductance	-	30	-	nH	
G	Weight	-	160	-	g	
M	Mounting Torque	2.5	-	5.0	N·m	M5

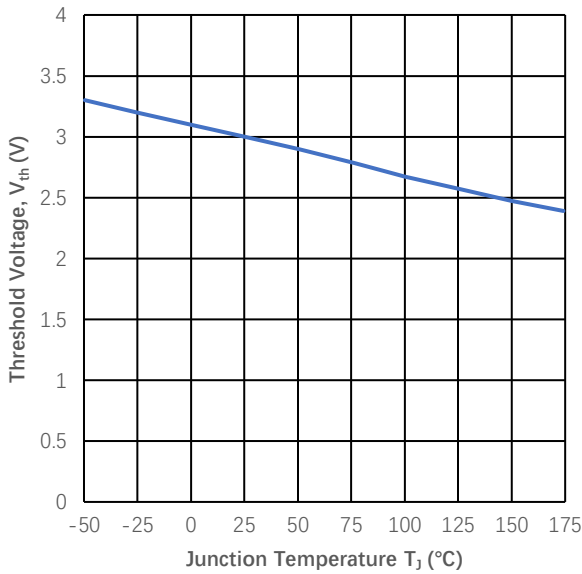
**Typical Characteristics**



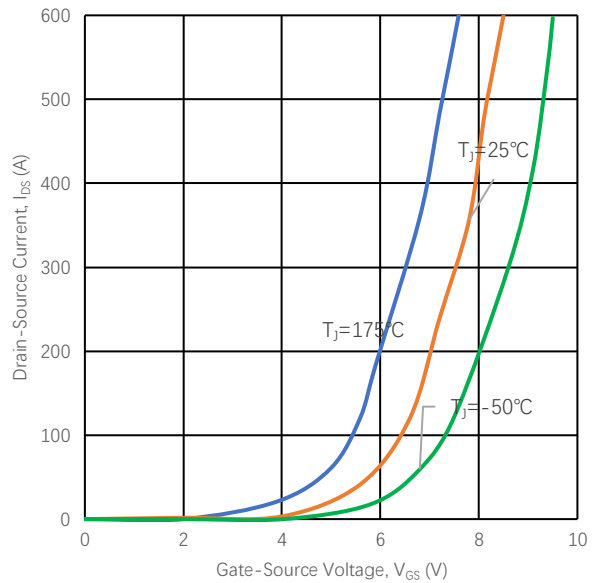
**Figure 1**  
 Output Characteristics ( $T_J=25\text{ }^\circ\text{C}$ )



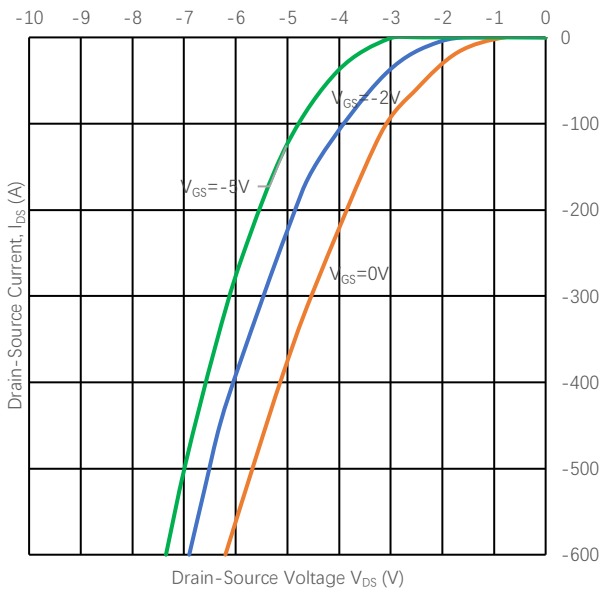
**Figure 2**  
 Normalized on-resistance vs. Temperature



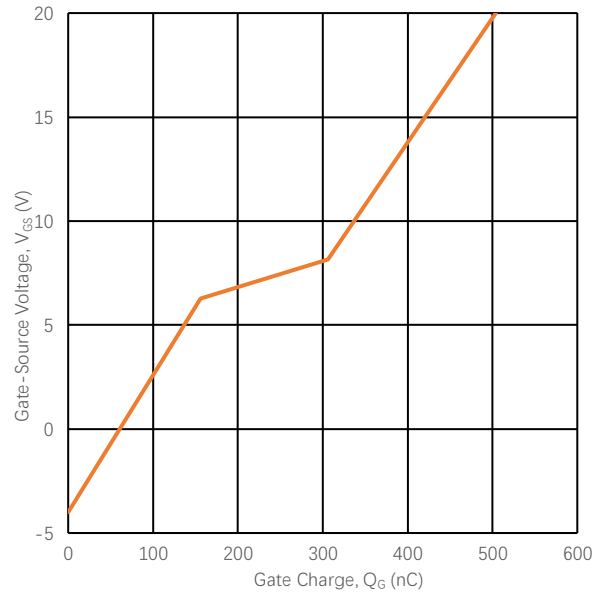
**Figure 3**  
 Threshold Voltage vs. Temperature



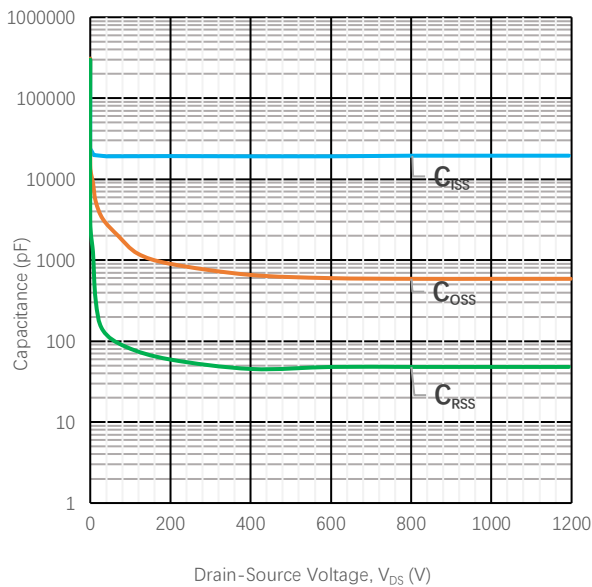
**Figure 4**  
 Transfer Characteristic for Various  $T_J$



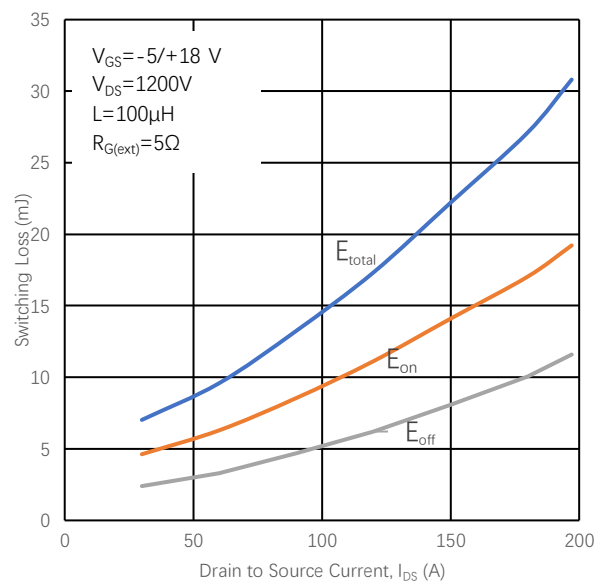
**Figure 5**  
 Diode Characteristic at 25 °C



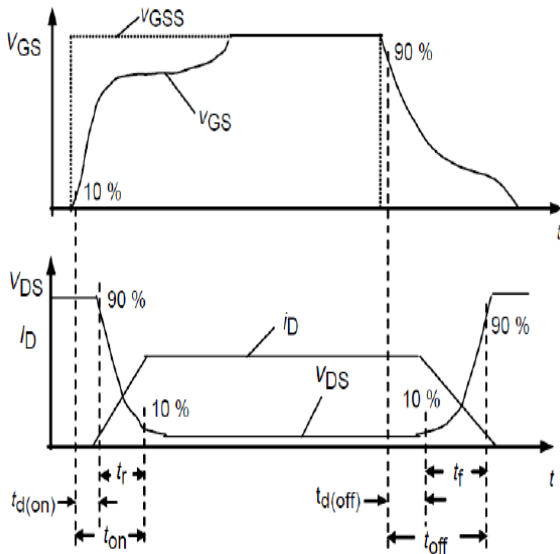
**Figure 6**  
 Typical Gate Charge Characteristics



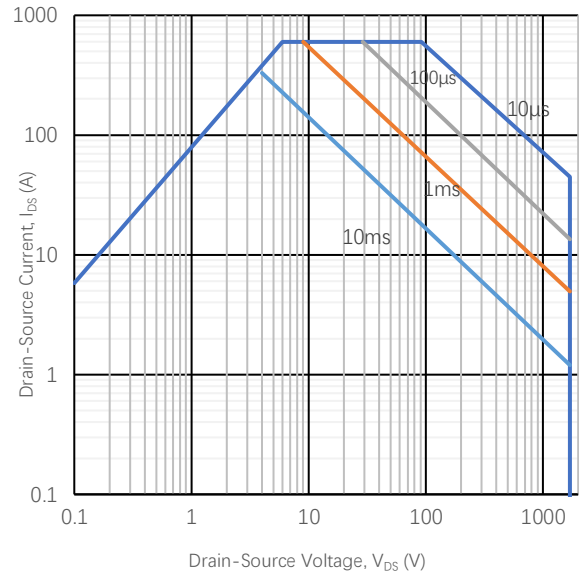
**Figure 7**  
 Typical Capacitances vs. Drain-source Voltage



**Figure 8**  
 Inductive Switching Energy vs. Drain Current

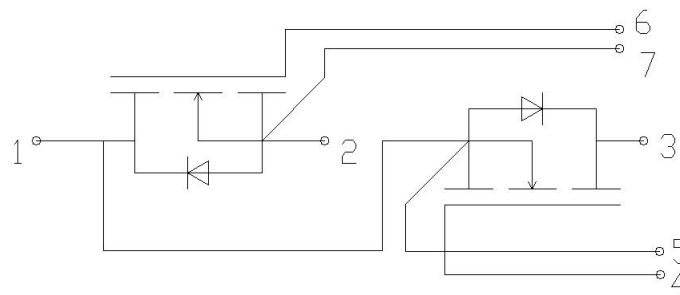


**Figure 9**  
 Switching Time Description

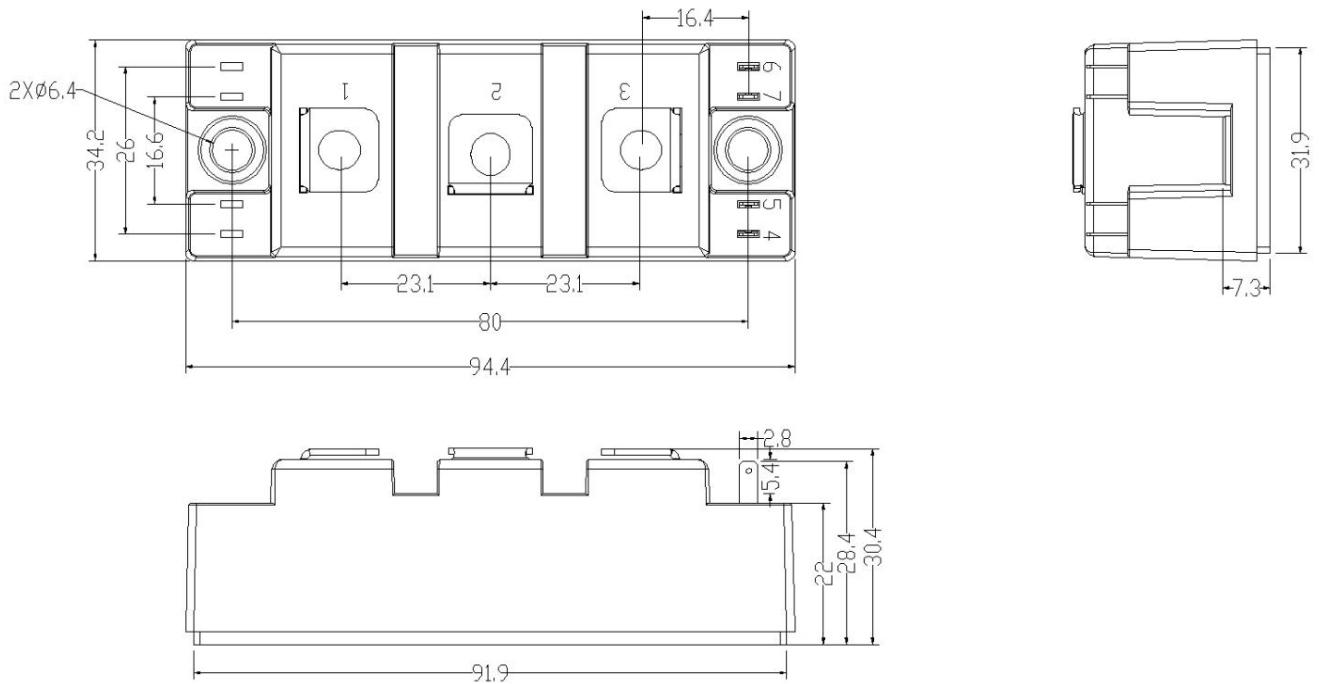


**Figure 10**  
 Safe Operating Area

**Circuit Diagram**



**Package Outlines(Unit: mm):**



**\*Important Usage Information and Disclaimer**

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